

902 KAR 100:142. Wire line service operations.

RELATES TO: KRS 211.842-211.852, 211.990(4), 10 C.F.R. 39

STATUTORY AUTHORITY: KRS 194.050, 211.090, 211.844, 10 C.F.R. 39

NECESSITY, FUNCTION, AND CONFORMITY: KRS 211.844 requires the Cabinet for Health and Family Services to promulgate administrative regulations for the registration and licensing of the possession or use of sources of ionizing or electronic product radiation and the handling and disposal of radioactive waste. This administrative regulation provides radiation safety requirements for persons using sources of radiation for wire line service operations including radioactive markers, mineral exploration, and subsurface tracer studies.

Section 1. Agreement with Well Owner or Operator. (1) A licensee shall not perform a wire line service operation with a sealed source in a well or well-bore unless, prior to commencement of the operation, the licensee has a written agreement with the well operator or well or land owner that:

- (a) If a sealed source is lodged downhole, a reasonable effort at recovery shall be made;
 - (b) If a decision is made to abandon the sealed source downhole, the requirements of this administrative regulation shall be met;
 - (c) A person shall not attempt to recover a sealed source in a manner, which, in the licensee's opinion, may result in its rupture;
 - (d) The radiation monitoring required in Section 24 of this administrative regulation shall be performed;
 - (e) If the environment, equipment, or personnel are contaminated with radioactive material, decontamination shall be performed prior to release from the site or for unrestricted use; and
 - (f) If the sealed source is classified as not retrievable after reasonable efforts at recovery have been expended, the requirements of Section 27 of this administrative regulation shall be met.
- (2) The licensee shall retain a copy of the written agreement with the well operator or well or land owner for three (3) years after completion of the well logging operations.

Section 2. Limits on Levels of Radiation. Radioactive materials shall be used, stored, and transported in a manner that the requirements of 902 KAR 100:019 and 100:070 shall be met.

Section 3. Storage Precautions. (1) Sources of radiation, except accelerators, shall be provided with a lockable storage or transport container.

(2) The container shall be provided with a lock (or tamper seal for calibration sources) to prevent unauthorized removal of, or exposure to, the source of radiation.

(3) Sources of radiation shall be stored in a manner that shall minimize the danger from explosion or fire.

Section 4. Transport Precautions. Transport containers shall be physically secured to the transporting vehicle to prevent accidental loss, tampering, or unauthorized removal.

Section 5. Radiation Survey Instruments. (1) The licensee or registrant shall maintain sufficient calibrated and operable radiation survey instruments, capable of detecting beta and gamma radiation, at each field station and temporary jobsite to make physical radiation surveys as required by this administrative regulation and by 902 KAR 100:019.

(2)(a) Instrumentation required by this section shall be capable of measuring one-tenth (0.1) millirem (.001 mSv) per hour through at least fifty (50) millirem (0.5 mSv) per hour.

(b) The licensee shall have available additional calibrated and operable radiation detection instruments sensitive enough to detect the low radiation and contamination levels that could be encountered if a sealed source ruptured. The licensee shall own the instruments or have a procedure to obtain them as soon as possible from a second party.

(3) The licensee shall have each radiation survey instrument required by subsection (1) and (2) of this section calibrated:

(a) At intervals not to exceed six (6) months and after each instrument servicing;

(b) At energies and exposure levels appropriate for use; and

(c) So that accuracy within plus or minus twenty (20) percent of the true radiation level shall be demonstrated on each scale.

(4) Records of calibration shall be maintained for a period of at least three (3) years after the date of calibration for inspection by the cabinet.

Section 6. Leak Testing of Sealed Sources. (1) A licensee who uses a sealed source of radioactive material shall have the source tested for leakage as specified in this section. The licensee shall keep a record of leak test results in units of microcuries and retain the record for inspection by the cabinet.

(2) Method of Testing.

(a) The wipe of a sealed source shall be performed using a leak test kit or method approved by the cabinet, U.S. Nuclear Regulatory Commission, or an agreement state;

(b) The wipe sample shall be taken from the nearest accessible point to the sealed source where contamination might accumulate;

(c) The wipe sample shall be analyzed for radioactive contamination; and

(d) The analysis shall be capable of detecting the presence of 0.005 microcuries (185 Bq) of radioactive material on the test sample and shall be performed by a person approved by the cabinet, U.S. Nuclear Regulatory Commission, or an agreement state, as established in 10 C.F.R. Part 39.35.

(3) Test Frequency.

(a) Each sealed source, except an Energy Compensation Source (ECS), shall be tested at intervals not to exceed six (6) months;

(b) In the absence of a certificate from a transferor that a test has been made within the six (6) months before the transfer, the sealed source shall not be used until tested.

(4)(a) Each ECS, not exempted by subsection (7) of this section, shall be tested at intervals not to exceed three (3) years. In the absence of a certificate from a transferor that a test has been made with the three (3) years before the transfer, the ECS shall not be used until tested.

(5) Removal from service:

(a) If the test conducted under subsections (1) and (2) of this section reveals the presence of 0.005 microcuries (185 Bq) or more of removable radioactive material, the licensee shall remove the sealed source from service immediately and have it decontaminated, repaired, or disposed by a cabinet, U.S. Nuclear Regulatory Commission, or agreement state licensee authorized to perform these functions;

(b) The licensee shall check the equipment associated with the leaking source for radioactive contamination and, if contaminated, have it decontaminated or disposed of by a cabinet, U.S. Nuclear Regulatory Commission, or agreement state licensee that is authorized to perform these functions.

(6) The licensee shall submit a report to the cabinet within five (5) days of receiving the test results, and the report shall describe the equipment involved in the leak, the test results, contamination that resulted from the leaking source, and the corrective actions taken up to the time that report is made.

(7) The following sealed sources shall be exempt from the periodic leak test requirements in subsections (1) through (5) of this section:

- (a) Hydrogen – 3 (tritium) sources;
- (b) Sources containing radioactive material with a half-life of thirty (30) days or less;
- (c) Sealed sources containing radioactive material in gaseous form;
- (d) Sources of beta- or gamma-emitting radioactive material with an activity of ten (10) microcuries (0.37 Bq) or less; and
- (e) Sources of alpha- or neutron-emitting radioactive material with an activity of ten (10) microcuries (0.37 Bq) or less.

Section 7. Quarterly Inventory. (1) A licensee or registrant shall conduct a quarterly physical inventory to account for sources of radiation received or possessed by the licensee or registrant.

(2) Records of inventories shall be maintained for at least two (2) years from the date of the inventory for inspection by the cabinet and shall include:

- (a) The quantities and kinds of sources of radiation;
- (b) The location where sources of radiation are assigned;
- (c) The date of the inventory; and
- (d) The name of the individual conducting the inventory.

Section 8. Utilization Records. A licensee or registrant shall maintain current records, which shall be kept available for inspection by the cabinet for at least two (2) years from the date of the recorded event showing the following information for each source of radiation:

- (1) A description (or make and model number or serial number) of each source of radiation used;
- (2) The identity of the logging supervisor responsible for the radioactive material and identity of logging assistant present;
- (3) Locations where used and dates of use; and
- (4) In the case of tracer materials and radioactive markers, the utilization record shall also indicate the radionuclide and activity used at a particular well site.

Section 9. Design and Performance Criteria for Sealed Sources used in Downhole Operations. (1) A sealed source, except those containing radioactive material in gaseous form, used in downhole operations shall, as a minimum, meet the following criteria:

- (a) Be of double encapsulated construction;
- (b) Contain radioactive material whose chemical and physical form shall be as insoluble and nondispersible as practicable; and
- (c) Meets the requirements of paragraphs (2), (3), and (4) of this section.

(2) For a sealed source manufactured on or before July 14, 1989, a licensee may use the sealed source in well logging applications if it meets the requirements of USASI N5.10-1968, Classification of Sealed Radioactive Sources, or the requirements in subsections (3) or (4) of this section.

(3) For a sealed source manufactured after July 14, 1989, a licensee may use the sealed source for use in well logging applications if it meets the oil-well logging requirements of ANSI/HPS N43.6-1997, Sealed Radioactive Sources – Classification.

(4) For a sealed source manufactured after July 14, 1989, a licensee may use the sealed source for use in well logging applications if the sealed source's prototype has been tested and found to maintain its integrity after each of the following tests:

(a) Temperature. The test source shall be held at minus forty (40) degrees Centigrade for twenty (20) minutes, 600 degrees Centigrade for one (1) hour, and then be subject to a thermal shock test with a temperature drop from 600 degrees Centigrade to twenty (20) degrees Centigrade within fifteen (15) seconds;

(b) Impact test. A five (5) kilogram steel hammer, two and five-tenths (2.5) centimeters in diameter, shall be dropped from a height of one (1) meter onto the test source;

(c) Vibration test. The test source shall be subject to a vibration from twenty-five (25) Hz to 500 Hz at five (5) g amplitude for thirty (30) minutes;

(d) Puncture test. A one (1) gram hammer and pin, three-tenths (0.3) centimeter in diameter, shall be dropped from a height of one (1) meter onto the test source.

(e) Pressure Test. The test source shall be subject to an external pressure of 1.695×10^7 pascals (24,600 pounds per square inch absolute).

(5) The requirements in subsections (1) through (4) of this section shall not apply to sealed sources that contain radioactive material in gaseous form.

(6) The requirements in subsections (1) through (4) of this section shall not apply to ECS sources, which shall be registered with the cabinet, U.S. Nuclear Regulatory Commission, or an agreement state.

(7) Certification documents shall be maintained for inspection by the cabinet for a period of at least two (2) years after source disposal.

(8) For sources abandoned downhole, certification documents shall be maintained until their disposal is authorized by the cabinet.

Section 10. Labeling. (1) A source, source holder, or logging tool containing radioactive material shall bear a durable, legible, and clearly visible marking or label that has, as a minimum, the standard radiation symbol without color requirement and the following wording: DANGER (or CAUTION) RADIOACTIVE.

(2) This labeling shall be on the smallest component, for example, source, source holder, or logging tool, that is transported as a separate piece of equipment.

(3) A transport container shall have permanently attached to it a durable legible and clearly visible label that has, at a minimum, the standard radiation symbol and the following wording: DANGER (or CAUTION) RADIOACTIVE. Notify civil authorities (or name of company) if found.

Section 11. Inspection and Maintenance. (1) A licensee or registrant shall conduct, at intervals not to exceed six (6) months, a program of inspection of sealed sources and inspection and maintenance of source holders, logging tools, source handling tools, storage containers, transport containers, uranium sinker bars, and injection tools to assure proper labeling, operation, and physical condition.

(2) Records of inspection and maintenance shall be maintained for a period of at least two (2) years for inspection by the cabinet.

(3) If an inspection conducted pursuant to this section reveals damage to labeling or components critical to radiation safety, the device shall be removed from service until repairs have been made.

(4) The repair, opening, or other modification of a sealed source shall be performed only by persons specifically authorized to do so by the cabinet, the U. S. Nuclear Regulatory Commission, or an Agreement State.

(5) If a sealed source is stuck in the source holder, the licensee shall not perform any operation, for example drilling, cutting, or chiseling on the source holder unless the licensee is specifically licensed by the cabinet, U.S. Nuclear Regulatory Commission, or an agreement state to perform the operation.

Section 12. Training Requirements. (1) A licensee or registrant shall not permit an individual to act as a logging supervisor until the individual has:

(a) Completed a course recognized by the cabinet, an Agreement State, or the U. S. Nuclear Regulatory Commission covering the subjects outlined in Section 28 of this administrative regulation and shall have demonstrated an understanding of the subjects;

(b) Received copies of and demonstrated an understanding of the following:

1. The requirements contained in this administrative regulation;
2. Provisions of 902 KAR Chapter 100;
3. The conditions of the license or registration certificate issued by the cabinet; and
4. The licensee's or registrant's approved operating and emergency procedures;

(c) Completed on-the-job training and demonstrated competence in the use of sources of radiation, related handling tools, and radiation survey instruments that shall be employed in his assignment; and

(d) Demonstrated an understanding of the requirements in paragraphs (a) and (b) of this subsection by successfully completing a written test.

(2) A licensee or registrant shall not permit an individual to act as a logging assistant until the individual has:

(a) Read and received instruction in the licensee's or registrant's operating and emergency procedures, the requirements contained in this administrative regulation and other applicable provisions of 902 KAR Chapter 100 and shall have demonstrated understanding of the subjects;

(b) Demonstrated competence to use, under the personal supervision of the logging supervisor, the sources of radiation, related handling tools, and radiation survey instruments that will be employed in his assignment; and

(c) Demonstrated understanding of the requirements in paragraphs (a) and (b) of this subsection by successfully completing a written or oral test.

(3) A licensee or registrant shall maintain employee training records for inspection by the cabinet for at least two (2) years following termination of employment.

Section 13. Operating and Emergency Procedures. The licensee's or registrant's operating and emergency procedures shall include instructions in at least the following:

(1) The handling and use of sources of radiation to be employed so that an individual is not likely to be exposed to radiation doses in excess of the limits established in 902 KAR 100:019, Section 3;

(2) The handling and use of radioactive material including the use of sealed sources in wells without surface casing for protecting fresh water aquifers, if appropriate;

(3) The use of remote handling tools for handling sealed source and radioactive tracer material except low-activity calibration sources;

(4) Methods and occasions for conducting radiation surveys, including surveys for detecting contamination;

(5) Methods and occasions for locking and securing sources of radiation;

(6) Personnel monitoring and the use of personnel monitoring equipment;

(7) Transportation to temporary job sites and field stations, including:

(a) Packaging of sources of radiation in the vehicles;

(b) Placarding of vehicles, if needed; and

(c) Physically securing sources of radiation during transportation to prevent accidental loss, tampering, or unauthorized removal;

- (8) Minimizing exposures of individuals from inhalation and ingestion of radioactive tracer material;
- (9) The procedure for notifying proper personnel if an accident occurs;
- (10) Maintenance of records, including records generated by logging personnel at temporary jobsites;
- (11) The inspection of sealed sources;
- (12) The inspection and maintenance of source holders, logging tools, source handling tools, storage containers, transport containers, uranium sinker bars, and injection tools;
- (13) The procedures that shall be followed if a sealed source is lodged downhole;
- (14) Picking up, receiving, and opening packages containing radioactive material;
- (15) Decontamination of the environment, equipment, and personnel if tracers are used; and
- (16) Actions to be taken if a sealed source is ruptured or a sealed source is lodged in a well, including steps to:
 - (a) Prevent the spread of contamination;
 - (b) Minimize inhalation and ingestion of radioactive material; and
 - (c) Obtain suitable radiation survey instruments as required by Section 5 of this administrative regulation.

Section 14. Personnel Monitoring. (1) A licensee or registrant shall not permit an individual to act as a logging supervisor or logging assistant unless the individual wears, at all times during well service operations utilizing sources of radiation, a personal dosimeter that is processed and evaluated by an accredited NVLAP processor.

- (2) A personal dosimeter shall be assigned to and worn by only one (1) individual.
- (3) Film badges shall be replaced monthly and other personal dosimeters replaced at least quarterly.
- (4) After replacement, a personal dosimeter shall be promptly processed.
- (5) Personnel monitoring records shall be maintained for inspection by the cabinet until it authorizes disposal.

Section 15. Security. During logging or tracer applications, the logging supervisor or other designated employee shall maintain direct surveillance of the operation to protect against unauthorized or unnecessary entry into a restricted area.

Section 16. Handling Tools. The licensee shall provide and require the use of tools that shall assure remote handling of sealed sources other than low activity calibration sources.

Section 17. Tracer Studies. (1) Protective gloves and other protective clothing shall be used by personnel handling radioactive tracer material.

- (2) Care shall be taken to avoid ingestion or inhalation of radioactive material.
- (3) A licensee shall not permit injection of radioactive material into potable aquifers without prior written authorization from the cabinet.

Section 18. Uranium Sinker Bars. The licensee may use a uranium sinker bar in well logging applications only if it is legibly impressed with the words "CAUTION – RADIOACTIVE – DEPLETED URANIUM" and "NOTIFY CIVIL AUTHORITIES (or COMPANY NAME) IF FOUND."

Section 19. Energy Compensation Source (ECS). (1) The licensee may use an energy compensation source which is contained within a logging tool, or other tool components, only if the ECS contains quantities of radioactive material not exceeding 100 microcuries (3.7 MBq).

(2) For well logging applications with a surface casing for protecting fresh water aquifers, use of the ECS is only subject to the requirements of Sections 6, 7, and 8.

(3) For well logging applications without a surface casing for protecting fresh water aquifers, use of the energy compensation source is only subject to the requirements of Sections 1, 6, 7, 8, 20, and 27.

Section 20. Use of a Sealed Source in a Well Without a Surface Casing. A licensee may use a sealed source in a well without a surface casing for protecting fresh water aquifers only if the licensee follows a procedure, approved by the Cabinet, for reducing the probability of the source becoming lodged in the well.

Section 21. Particle Accelerators. A licensee or registrant shall not permit above ground testing of particle accelerators if the testing will result in the production of radiation except in areas or facilities controlled or shielded so that the requirements of 902 KAR 100:019 shall be met.

Section 22. Tritium Neutron Generator Target Source. (1) Use of a tritium neutron generator target source, containing quantities not exceeding thirty (30) curies (1,110 GBq) and in a well with a surface casing to protect fresh water aquifers shall be as established in this administrative regulation, except Sections 1, 9, and 27 of this administrative regulation.

(2) Use of a tritium neutron generator target source, containing quantities exceeding thirty (30) curies (1,110 GBq) or in a well without a surface casing to protect fresh water aquifers shall be as established in this administrative regulation, except Section 9 of this administrative regulation.

Section 23. Radiation Surveys. (1) A radiation survey shall be made and recorded for each area where radioactive materials are stored and used.

(2) A radiation survey shall be made and recorded of the radiation levels in occupied positions and on the exterior of each vehicle used to transport radioactive materials.

(3) Each survey shall include each source of radiation and combination of sources of radiation transported in the vehicle.

(4) After removal of the sealed source from the logging tool and before departing the job site, the logging tool detector shall be energized, or a survey meter used, to assure that the logging tool is free of contamination.

(5) A radiation survey shall be made and recorded at the job site or well head for tracer operations, except for those using hydrogen-3, carbon-14, and sulfur-35.

(6) Each survey shall include radiation levels prior to and after the operation.

(7) Records required pursuant to this section shall include:

(a) The dates;

(b) The identification of the individual making the survey;

(c) Identification of survey instrument used; and

(d) An exact description of the location of the survey.

(8) Each survey record shall be maintained for inspection by the cabinet for at least two (2) years after completion of the survey.

Section 24. Radioactive Contamination Control. (1) If the licensee has reason to believe that, as a result of an operation involving a sealed source, the encapsulation of the sealed source may be damaged by the operation, the licensee shall conduct a radiation survey, including a contamination survey, during and after the operation.

(2) If the licensee detects evidence that a sealed source has ruptured or radioactive materials have caused contamination, the licensee shall initiate immediately the emergency procedures required by Section 13 of this administrative regulation.

(3) If contamination results from the use of radioactive material in well logging, the licensee shall decontaminate work areas, equipment, and unrestricted areas.

(4) During efforts to recover a sealed source lodged in the well, the licensee shall continuously monitor, with a radiation detector capable of detecting the radioactive material, the circulating fluids from the well, if present, to check for contamination resulting from damage to the sealed source.

Section 25. Records Required at Field Stations. A licensee or registrant maintaining field stations from which well service operations are conducted shall have copies of the following records available at each station for inspection by the cabinet:

- (1) Appropriate license or certificate of registration;
- (2) Operating and emergency procedures;
- (3) A copy of 902 KAR 100:019, 100:142, and 100:165;
- (4) Survey records required pursuant to Section 23 of this administrative regulation;
- (5) Quarterly inventories required pursuant to Section 7 of this administrative regulation;
- (6) Utilization records required pursuant to Section 8 of this administrative regulation;
- (7) Records of inspection and maintenance required pursuant to Section 11 of this administrative regulation;
- (8) Records of the latest survey instrument calibration pursuant to Section 5 of this administrative regulation;
- (9) Records of the latest leak test results pursuant to Section 6 of this administrative regulation; and
- (10) Training records required by Section 12 of this administrative regulation.

Section 26. Records Required at Temporary Job Sites. (1) A licensee or registrant conducting a well service operation at a temporary job site shall have the following records available at that site for inspection by the cabinet:

- (a) Operating and emergency procedures;
- (b) Survey records required pursuant to Section 23 of this administrative regulation for the period of operation at the site;
- (c) Evidence of current calibration for the radiation survey instruments in use at the site; and
- (d) The shipping papers for the transportation of radioactive materials.

(2) In addition to the record requirements of this section, at each temporary job site where a well service operation is conducted under cabinet authorization granted pursuant to 902 KAR 100:065, a licensee or registrant shall have the following records available for inspection by the cabinet:

- (a) Current leak test records for the sealed sources in use at the site;
- (b) The appropriate license and certification of registration or equivalent document; and
- (c) Shipping papers for the transport of radioactive material.

Section 27. Notification of Incidents and Lost Sources. (1) If the licensee knows or has reason to believe that a sealed source has been ruptured, the licensee shall:

- (a) Immediately notify by telephone the Cabinet for Health and Family Services, Radiation Health Branch at (502) 564-3700 from 8 a.m.-4:30 p.m. Monday through Friday or at (800) 255-2587 at other hours; and

(b) Within thirty (30) days, notify by confirmatory letter to the Manager, Radiation Health Branch, 275 East Main Street, Frankfort, Kentucky 40621. The letter shall:

1. Designate the well or other location;
2. Describe the magnitude and extent of the escape of radioactive materials;
3. Assess the consequences of the rupture; and
4. Explain efforts planned or being taken to mitigate these consequences.

(2) The licensee shall notify the Cabinet for Health and Family Services, Radiation Health Branch of the theft or loss of radioactive materials, radiation overexposures, excessive levels and concentrations of radiation, and certain other accidents as required by 902 KAR 100:019, Sections 38, 39, and 40 and 100:040, Section 15.

(3) If a sealed source or device containing radioactive material is lodged in a well and it becomes apparent that efforts to recover the sealed source will not be successful, the licensee shall:

(a) Notify the Cabinet for Health and Family Services, Radiation Health Branch, immediately by telephone at (502) 564-3700 from 8 a.m. - 4:30 p.m., Monday through Friday or at (800) 255-2587 at other hours of the circumstances that resulted in the inability to retrieve the source and obtain cabinet approval to implement abandonment procedures; or

(b) That the licensee implemented abandonment before receiving cabinet approval because the licensee believed there was an immediate threat to public health and safety.

(4) If it becomes apparent that efforts to recover the radioactive source shall not be successful, the licensee shall:

(a) Advise the well owner or well-operator of the requirements of this administrative regulation regarding abandonment and an appropriate method of abandonment, which shall include:

1. The immobilization and sealing in place of the radioactive source with a cement plug;
2. A means to prevent inadvertent intrusion on the source, unless the source is not accessible to any subsequent drilling operations; and

3. The mounting of a permanent identification plaque, containing information required by this section, at the surface of the well, unless the mounting of the plaque is not practical;

(b) Either ensure that abandonment procedures are implemented within thirty (30) days after the sealed source has been classified as irretrievable or request an extension of time if unable to complete the abandonment procedures; and

(c) File a written report on the abandonment with the Manager, Radiation Health Branch, 275 East Main Street, Frankfort, Kentucky 40621 within thirty (30) days after a sealed source has been classified as irretrievable. The report shall be sent to each appropriate state or federal agency that issued permits or approved of the drilling operation and shall include the following information:

1. Date of occurrence and a brief description of attempts to recover the source;
2. Description of the radioactive source involved, including radionuclide, quantity, and chemical and physical form;
3. Surface location and identification of well;
4. Results of efforts to immobilize and seal the source in place;
5. A brief description of the attempted recovery effort;
6. Depth of the radioactive source;
7. Depth of the top of the cement plug;
8. Depth of the well;
9. The immediate threat to public health and safety justification for implementing abandonment if prior cabinet approval was not obtained in accordance with subsection (6) of this section;

10. Information such as a warning statement, contained on the permanent identification plaque; and

11. State and federal agencies receiving a copy of this report.

(5) If a sealed source containing radioactive material is abandoned downhole, the licensee shall provide a permanent plaque mounted at the surface of the well. This plaque shall:

(a) Be constructed of long-lasting material, such as stainless steel, brass, bronze, or Monel. The size of the plaque shall be at least seven (7) inch, seventeen (17) cm square and one-eighth (1/8) inch (3mm) thick. Letter size of the word "Caution" shall be approximately twice the letter size of the rest of the information, for example, one-half (1/2) inch and one-fourth (1/4) inch letter size, respectively; and

(b) Contain the following engraved information on its face:

1. The word "Caution;"

2. The radiation symbol (color not required);

3. The date of abandonment;

4. The name of the well operator or well owner;

5. The well name and well identification number or other designation;

6. The sealed source by radionuclide and quantity of activity;

7. The source depth and the depth to the top of the plug;

8. An appropriate warning, depending on the specific circumstances of an abandonment, for example, "Do not drill below plug depth;" or "Do not enlarge casing;" and

9. The words "Do not reenter hole before contacting Radiation Health Branch, Kentucky Cabinet for Health and Family Services."

(6) If the licensee knows or has reason to believe that radioactive material has been lost in or to an underground potable water source, the licensee shall:

(a) Immediately notify the Cabinet for Health and Family Services, Radiation Health Branch by telephone at (502) 564-3700 from 8 a.m. - 4:30 p.m. Monday through Friday or at (800) 255-2587 at other hours; and

(b) Confirm by letter, within thirty (30) days, to the Manager, Radiation Health Branch, 275 East Main Street, Frankfort, Kentucky 40621.

(7) The notice shall designate the well location and shall describe the magnitude and extent of loss of radioactive material, assess the consequences of the loss, and explain efforts planned or being taken to mitigate consequences.

Section 28. Minimum Training Requirements for Logging Supervisors. Logging supervisors shall receive minimum training in the following areas:

(1) Fundamentals of radiation safety:

(a) Characteristics of gamma, neutron, and x-radiation;

(b) Units of radiation dose (mrem);

(c) Quantity of radioactivity (curie);

(d) Significance of radiation dose:

1. Radiation protection standards; and

2. Biological effects of radiation dose;

(e) Levels of radiation from sources of radiation;

(f) Methods of controlling radiation dose:

1. Working time;

2. Working distance; and

3. Shielding; and

(g) Radiation safety practices including prevention of contamination and methods of decontamination;

- (2) Radiation detection instrumentation to be used:
 - (a) Use of radiation survey instruments:
 - 1. Operation;
 - 2. Calibration; and
 - 3. Limitations;
 - (b) Survey techniques; and
 - (c) Use of personnel monitoring equipment;
- (3) Equipment to be used:
 - (a) Remote handling equipment;
 - (b) Sources of radiation;
 - (c) Storage and transport containers; and
 - (d) Operation and control of equipment;
- (4) The requirements of 10 C.F.R. Part 39 and 902 KAR Chapter 100;
- (5) The licensee's or registrant's written operating and emergency procedures;
- (6) The licensee's or registrant's recordkeeping procedures; and
- (7) Case histories of well logging accidents.

Section 29. Incorporation by Reference. (1) The following material is incorporated by reference:

- (a) "USASI N5.10-1968, Classification of Sealed Radioactive Sources", 1968; and
 - (b) "ANSI/HPS N43.6-1997, "Sealed Radioactive Sources – Classification", 1997.
- (2) This material may be inspected, copied, or obtained, subject to applicable copyright law, at the Office of the Commissioner of Public Health, 275 East Main Street, Frankfort, Kentucky 40621, Monday through Friday, 8:00 a.m. to 4:30 p.m. (5 Ky.R. 293; eff. 11-1-1978; Am. 12 Ky.R. 1069; eff. 1-3-1986; 16 Ky.R. 2556; eff. 6-27-1990; 21 Ky.R. 2311; eff. 4-19-1995; 38 Ky.R. 850; 1142; eff. 12-7-2011; 41 Ky.R. 953; 1642; eff. 2-5-2015.)